

### **REMARKS**

This Amendment constitutes a submission accompanying a Request for Continued Examination (RCE) under the provisions of 37 C.F.R. § 1.114. In this Amendment, Applicants cancel claims 25 – 28 and 36, without prejudice or disclaimer of their subject matter, and amend claims 18 – 24, 29 – 33, and 35 to more appropriately define the present invention. Applicants submit that the amendments contain no new matter, in accordance with the requirements of 37 C.F.R. § 1.121(f).

#### **Regarding the Office Action:**

In the Final Office Action, the Examiner approved the changes to the drawings; but maintained the rejection of claims 18 – 22 and 34 – 36 under 35 U.S.C. § 103(a) as unpatentable over Kondo, et al. (U.S. Patent Application Publication US2001/0017576A1) in view of Applicants' Fig. 18 ("AAPA Fig. 18"); and maintained the rejections of claims 23 – 33 under 35 U.S.C. § 103(a) as unpatentable over Kondo and AAPA Fig. 18, and further in view of Kono (U.S. Patent No. 5,929,722). Upon entry of this Amendment, claims 18 – 24 and 29 – 35 remain pending.

Applicants appreciate the Examiner's thorough examination of this application, though respectfully traverse the rejections, as detailed above, for the following reasons.

#### **Regarding Amendments to Claims 25 – 28 and 36:**

Applicants amend claims 25 – 28 and 36 to more appropriately define the invention. Applicants submit that the amendments and new claims contain no new matter, in accordance with the requirements of 37 C.F.R. § 1.121(f) and the references to the disclosure that follow. Accordingly, Applicants respectfully point out that "[a]mendments to an application which are

supported in the original description are NOT new matter.” M.P.E.P. § 2163.07, emphasis in original.

In making various references to the specification and drawings set forth below, it is understood that Applicants are in no way intending to limit the scope of the claims to the exemplary embodiments described in the specification and illustrated in the drawings. Rather, Applicants expressly affirm that they are entitled to have the claims interpreted broadly, to the maximum extent permitted by statute, regulation, and applicable case law.

The amendments to claim 18 draw support in the specification, for example, on page 6, lines 20-24; page 8, lines 3-9; page 8, line 27 to page 9, line 1; page 22, lines 19-28; page 24, lines 1-4; and Figs. 2 and 3.

The amendments to claim 19 draw support in the specification, for example, on page 8, line 27 to page 9, line 6; and Fig. 3, the respective sheets 102 and 104 for load capacitors; sheet 107 for a second transmission line; and sheet 109 for a first transmission line.

The amendments to claim 20 draw support in the specification, for example, on page 6, lines 20-24, page 8, lines 3-9 (particularly, lines 8-9), page 8, line 27 to page 9, line 1, page 17, line 29 to page 18, line 2, page 17, lines 3-13, and Fig. 2, sheet 11, and Fig. 3.

The amendments to claim 21 draw support in the specification, for example, on page 8, line 25 to page 9, line 6, in view of page 23, lines 21-22.

The amendments to claim 22 draw support in the specification, for example, on page 6, lines 20-24, page 8, line 25 to page 9, line 3, page 9, lines 24-27, page 15, lines 25-28, page 17, lines 3-13, page 17, line 21 to page 18, line 2, and page 19, lines 10-12.

The amendments to claim 23 draw support in the specification, for example, on page 18, lines 3-6, page 17, lines 14-17 and lines 21-24, and page 26, lines 22-25.

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The amendments to claim 24 draw support in the specification, for example, on pages 9, lines 15-18, page 18, lines 3-6, page 17, lines 14-17 and lines 21-24, and page 26, lines 22-25.

The amendments to claim 29 draw support in the specification, for example, on page 14, line 26 to page 15, line 6, page 17, lines 6-13, and Fig. 2, sheet 11.

The amendments to claim 30 draw support in the specification, for example, on page 19, line 26 to page 20, line 4, and Figs. 4(a)-(c) (please also refer to the description on page 24, line 28 to page 25, line 15; and page 21, lines 10-15).

The amendments to claim 31 draw support in the specification, for example, on page 10, lines 15-20.

The amendments to claim 32 draw support in the specification, for example, on page 10, line 21, to page 11, line 3.

In rewritten claim 35, dependent claim 36 has been combined therewith.

**Regarding the Rejection of Claims 18 – 22 and 34 – 36 under 35 U.S.C. § 103(a):**

Applicants respectfully traverse the rejection of claims 18 – 22 and 34 – 36 under 35 U.S.C. § 103(a) as unpatentable over Kondo in view of AAPA Fig. 18. Applicants respectfully disagree with the Examiner's arguments and conclusions, and respectfully submit that a *prima facie* case of obviousness has not been established. The rejection of claim 36 has been rendered moot by the cancellation of this claim.

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim elements. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a

reference or to combine reference teachings. Third, there must be a reasonable expectation of success. *See* M.P.E.P. § 2143.

To begin, Applicants submit that the Examiner has not met at least one of the essential criteria for establishing a *prima facie* case of obviousness, wherein "the prior art reference (or references when combined) must teach or suggest all the claim limitations." *See* M.P.E.P. §§ 2142, 2143, and 2143.03.

Kondo discloses in Fig. 2 a block diagram illustrating a circuit configuration example of the integrated isolator device with a built-in power amplifier. This device has an isolator element and impedance matching circuit, a high frequency power amplifier, a SAW element, and an APC circuit, serving as feedback means, connected to the high frequency power circuit from the impedance matching circuit to control outputs of the high frequency power amplifier circuit. Kondo is silent, however, regarding any of the detailed features of the APC circuit. Moreover, although no electric power dividing circuit is necessary for constituting the APC, Kondo does not disclose an explanation of the features additionally required for setting up the APC circuit.

Kondo's Fig. 2 also shows the impedance matching circuit having an arrow sign therefrom to the APC circuit. Kondo's impedance matching circuit might function as an electric power dividing circuit. However, Kondo merely teaches the power amplifier MMIC chip connected with the input port of the isolator element through the output-impedance matching circuit. (*See* Kondo's page 4, paragraph no. [0058], lines 12-14, and Figs. 11 and 12, showing equivalent circuits for the impedance matching circuit, which does not teach or suggest an output-impedance circuit having an electric power dividing circuit.) Furthermore, Kondo discloses a laminated low-pass filter having an integrated directional coupler.

Thus, as mentioned above, Kondo teaches an integrated isolator device with a built-in power amplifier having an isolator element, and impedance matching circuit, a high frequency power amplifier, a SAW element and an APC circuit, serving as feedback means, connected to the high frequency power circuit from the impedance matching circuit to control outputs of the high frequency power amplifier provided to the dielectric multi-layered substrate. (*See* Kondo's paragraph no. [0012]). Based on the knowledge generally available to one of ordinary skill in the art at the time the present invention was made, concerning an electric power dividing circuit, about which Kondo is silent, the electric power dividing circuit should have a directional coupler, a Wilkinson-type electric power dividing circuit, or a coupling capacitor.

AAPA Fig. 18 discloses, as described in the specification of the present application, terminal amplifier 1 providing a high-frequency signal from a modulation circuit (not shown), in which an output proportional to the high-frequency signal is taken out by directional coupler 2 and supplied to automatic gain control circuit 7 to control the output power of amplifier 1. However, AAPA Fig. 18 is silent regarding magnetically coupled transmission lines in directional coupler 2.

In contrast to the cited references, Applicants' present claim 18 recites (1) not only a plurality of load capacitors connected to the central conductors, but also a first transmission line and a second transmission line magnetically coupled to the first transmission line to constitute a directional coupler, provided in one laminated body, and (2) the first and second transmission lines are formed by line electrodes sandwiched by ground electrodes, and the first transmission line is connected to one of the central conductors on an upper surface of the laminate via the through-hole electrodes formed in dielectric layers on which one of the ground electrodes is formed. This is recited in Applicants' claim 18, wherein,

"... a laminate constituted by a plurality of dielectric layers having conductor layers comprising electrode patterns, ground electrodes and line electrodes, (d) said laminate comprising a plurality of load capacitors connected to said central conductors, a first transmission line and a second transmission line magnetically coupled to said first transmission line to constitute a directional coupler, said load capacitors being formed by conductor layers (electrode patterns) opposing via said dielectric layers, said first and second transmission lines being formed by conductor layers (line electrodes) sandwiched by conductor layers (ground electrodes), through-hole electrodes being provided on dielectric layers on which one of said conductor electrodes (ground electrodes) is formed, and said first transmission line being connected to one of said central conductors on an upper surface of said laminate via said through-hole electrodes."

Embodiments of the invention according to claim 18 make it possible to easily set up impedance matching between the non-reciprocal circuit device and the directional coupler as well as to miniaturize the non-reciprocal circuit module. *See*, for example, page 87, lines 15-20 of the specification. Also, the first and second transmission lines formed by line electrodes and sandwiched by ground electrodes decrease interference with the other conductor layers. *See*, for example, page 10, line 21 to page 11, line 3, and page 19, lines 6-9 of the specification. In addition, the first transmission line being connected to one of the central conductors on upper surface of the laminate via the through-hole electrodes formed in dielectric layers on which one of the ground electrodes is formed reduces the parasitic inductance to the load capacitors, and prevents the non-reciprocal circuit module from electrical deterioration. *See*, for example, page 8, lines 10-15 of the specification.

Also, in contrast to the cited references, Applicants' present claim 20 recites that (1) the laminate comprises a plurality of load capacitors, a first transmission line, and a second transmission line magnetically coupled to the first transmission line to constitute a directional

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coupler in addition to a plurality of load capacitors, (2) the first and second transmission lines are formed by line electrodes sandwiched by ground electrodes, and the first transmission line is connected to one of the central conductors via the through-hole electrodes, and (3) not only the electrode patterns of the plural load capacitors on the hot side of the ground side are divided for every load capacitor, but also a through-hole electrode connected to conductor layers (electrode patterns) on the ground side is formed between conductor layers (electrode patterns) on the hot side formed on the same dielectric layer. This is recited in Applicants' present claim 20, wherein (among other things),

"... a laminate constituted by a plurality of dielectric layers having conductor layers comprising electrode patterns, ground electrodes and line electrodes, (d) said laminate comprising a plurality of load capacitors, a first transmission line, and a second transmission line magnetically coupled to said first transmission line to constitute a directional coupler, said load capacitors being formed by conductor layers (electrode patterns) opposing via said dielectric layers, said conductor layers (electrode patterns) of said plural load capacitors on the hot side and the ground side being divided for every load capacitor together with a through-hole electrode connected to conductor layers (electrode patterns) on said ground side being formed between conductor layers (electrode patterns) on said hot side formed on the same dielectric layer, said first and second transmission lines being formed by conductor layers (line electrodes), the other through-hole electrodes being provided in the dielectric layers formed said electrode layers (electrode patterns), and said first transmission line being connected to one of said central conductors via said through-hole electrodes."

Embodiments of the invention according to claim 20 make it possible to prevent the parasitic inductance to the load capacitors and equivalent series resistance from increasing to keep the load capacitor at a high Q value, and further the formation of the through-hole electrode connecting to the electrode patterns on the ground side between electrode patterns on the hot side

functions to prevent interference between adjacent electrode patterns on the hot side, thereby avoiding deterioration in the electric characteristics. *See*, for example, page 8, lines 10-15, and page 9, lines 6-9 of the specification.

Further in contrast to the cited references, Applicants' claim 22 recites that part of pattern electrodes of the load capacitors on the hot side is formed on a main surface of the laminate opposing to the permanent magnet, the first transmission line is connected to a pattern electrode formed on the main surface via through-hole electrodes formed in dielectric layers, and ends of the central conductors are connected to the pattern electrodes formed on the main surface of the laminate and the electrode patterns. This is recited in Applicants' claim 22, wherein, *inter alia*,

"... said laminate comprising a plurality of load capacitors each formed by conductor layers opposing via said dielectric layer around said pore, a first transmission line connected to any one of said central conductors, and a second transmission line magnetically coupled to said first transmission line to constitute a directional coupler, part of conductor layers (pattern electrodes) of said load capacitors on the hot side being formed on a main surface of said laminate opposing to said permanent magnet, said first transmission line being connected to a pattern electrode formed on said main surface via through-holes formed in dielectric layers, and ends of said central conductors being connected to said conductor layers (pattern electrodes) formed on said main surface of said laminate and said electrode patterns."

Embodiments according to claim 22 serve to keep such a state that the directional coupler is not electrically connected to the load capacitors during the producing procedure thereof.

Therefore, it is possible to measure the electric characteristics of the directional coupler in advance, thereby resulting in easily screening. *See*, for example, page 9, lines 7-9 of the specification.



This conclusively demonstrates just some of the differences between Kondo, AAPA Fig. 18, and Applicants' present claimed invention. The Examiner has therefore not met at least one of the essential criteria for establishing a *prima facie* case of obviousness, wherein "the prior art reference (or references when combined) must teach or suggest all the claim limitations." See M.P.E.P. §§ 2142, 2143, and 2143.03.

Kondo in view of AAPA Fig. 18, taken alone or in combination, does not teach or suggest all the features of Applicants' claimed invention, the Examiner's application of these references does not render the recitations of Applicants' claims obvious. Even if the Examiner's characterization of Kondo and AAPA Fig. 18 were correct (which Applicants dispute), this still does not establish that there would have been the requisite suggestion or motivation to modify Kondo with AAPA Fig. 18. "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." M.P.E.P. § 2143.01, citing *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) (emphasis in original).

Since Kondo and AAPA Fig. 18, taken alone or in combination, do not teach or suggest all the elements of Applicants' claimed invention, and there can be no suggestion or motivation in the cited references to modify them. Applicants submit that the cited references do not suggest the desirability of their modification to produce Applicants' present invention.

In addition to the fact that Kondo and AAPA Fig. 18 do not teach or suggest all the recitations of Applicants' claimed invention, Kondo and AAPA Fig. 18 do not provide the requisite motivation for their modification, or any reasonable expectation of success to be derived from so doing. Applicants have already established that Kondo and AAPA Fig. 18 do not teach or suggest Applicants' claimed invention. Therefore, the Examiner cannot draw a

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conclusion of obviousness, since Applicants have already demonstrated that Kondo and AAPA Fig. 18, taken alone or in combination, still do not teach or suggest all the elements of Applicants' claimed invention. Applicants further submit that, according to the M.P.E.P., the Examiner's citation of Kondo and AAPA Fig. 18 is not sufficient for the Examiner to establish *prima facie* obviousness.

Finally, Applicants note that the M.P.E.P. sets forth that "[i]f an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious." M.P.E.P. § 2143.03.

Thus, dependent claims 19, 21, 34, and 35 are also allowable for the reasons presented herein, in addition to being allowable at least by virtue of their dependence from allowable base claim 18. Therefore, Applicants respectfully submit that the Examiner should withdraw the improper 35 U.S.C. § 103(a) rejection.

**Regarding the Rejection of Claim 23 – 33 under 35 U.S.C. § 103(a):**

Applicants respectfully traverse the rejection of claim 23 – 33 under 35 U.S.C. § 103(a) as unpatentable over Kondo and AAPA Fig. 18, and further in view of Kono. Applicants respectfully disagree with the Examiner's arguments and conclusions, and submit that a *prima facie* case of obviousness has not been established. The rejection of claims 25 – 28 has been rendered moot by the cancellation of these claims without prejudice or disclaimer of their subject matter.

The requirements for establishing a *prima facie* case of obviousness have been set forth previously. Kondo, AAPA Fig. 18, and Kono, taken as-is or modified, does not teach or suggest the elements of Applicants' independent claims 18 and 22, from which claims 23, 24, and 19 – 33 depend.

Applicants have already demonstrated previously that Kondo and AAPA Fig. 18 do not teach or suggest all the elements of Applicants' independent claims 18, 20, and 22, and therefore, for at least the reasons stated above. Applicants' dependent claims 23, 24, and 29 – 33 are not obvious. The Examiner's addition of Kono, however, still does not teach or suggest the recitations not taught or suggested by Kondo and AAPA Fig. 18 to satisfy all the elements of Applicants' independent claims, and consequently, Kono does not cure the deficiencies of either Kondo or AAPA Fig. 18.

Therefore, since Applicants have already established that Kondo and AAPA Fig. 18, taken alone or in combination, do not teach or suggest at least each and every element of Applicants' independent claims, since Kono does not teach or suggest the elements of Applicants' claimed invention not taught or suggested by either Kondo or AAPA Fig. 18, the Examiner has therefore not met at least one of the essential criteria for establishing a *prima facie* case of obviousness, wherein "the prior art reference (or references when combined) must teach or suggest all the claim limitations." See M.P.E.P. §§ 2142, 2143, and 2143.03. Consequently a 35 U.S.C. § 103(a) rejection cannot be applied.

Furthermore, dependent claims 23, 24, and 29 – 33 are allowable at least by virtue of their respective dependency from allowable base claims 18 and 20. Therefore, Applicants respectfully submit that the Examiner should withdraw the 35 U.S.C. § 103(a) rejection.

**Conclusion:**

In making various references to the specification and drawings set forth above, it is understood that Applicants are in no way intending to limit the scope of the claims to the exemplary embodiments described in the specification and illustrated in the drawings. Rather,

Applicants expressly affirm that they are entitled to have the claims interpreted broadly, to the maximum extent permitted by statute, regulation, and applicable case law.

In view of the foregoing, Applicants request reconsideration of the application and submit that the rejections detailed above should be withdrawn. Applicants submit that pending claims 18 – 24 and 29 – 35 are in condition for allowance, and request a favorable action.

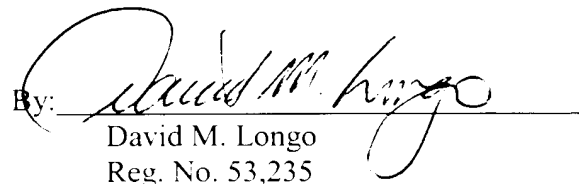
Applicants respectfully request that this Amendment be considered by the Examiner, placing the application in condition for allowance. This Amendment should allow for immediate and favorable action by the Examiner.

Should the Examiner continue to dispute the patentability of the claims after consideration of this Amendment, Applicants encourage the Examiner to contact Applicants' undersigned representative by telephone to discuss any remaining issues or to resolve any misunderstandings. Applicants' undersigned representative would welcome the opportunity to discuss the merits of the present invention with the Examiner if telephone communication will aid in advancing prosecution of the present application.

Please grant any extensions of time under 37 C.F.R. § 1.136 required in entering this response. If there are any fees due under 37 C.F.R. § 1.16 or 1.17 including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to our deposit account 06-0916.

Respectfully submitted,

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By:   
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